

Name: _____
Date: _____

- 1) Define **mutually exclusive** in your own words.

- 2) Which events are **mutually exclusive**?
 - a. Rolling an odd number on a die and rolling a 5 on a die
 - b. Rolling a 3 on a die and rolling an even number on a die
 - c. Graduating from high school and being accepted into college
 - d. Graduating from high school and playing an instrument

- 3) State two events that are **mutually exclusive**.

- 4) Define **independent** in your own words.

- 5) Which events are probably **independent**?
 - a. Graduating from high school and being accepted into college
 - b. Getting an odd number and a 5 on one roll of a die
 - c. Drawing a red M&M candy from a package and then drawing a green M&M
 - d. Winning a swim meet and winning the lottery

- 6) State two events that are **independent**.

Statistics
Probability Unit Test Review

- 7) Label each pair of events as **mutually exclusive**, **independent**, or **dependent**, then **justify** your choice.
- a. A traffic light is red. At the same time, there is a car at this intersection with its headlights on.

Justify:

- b. A traffic light is green. At the same time, the traffic light for cross traffic is also green.

Justify: (3pts)

- c. A traffic light is red. At the same time, there is a car stopped at the intersection.

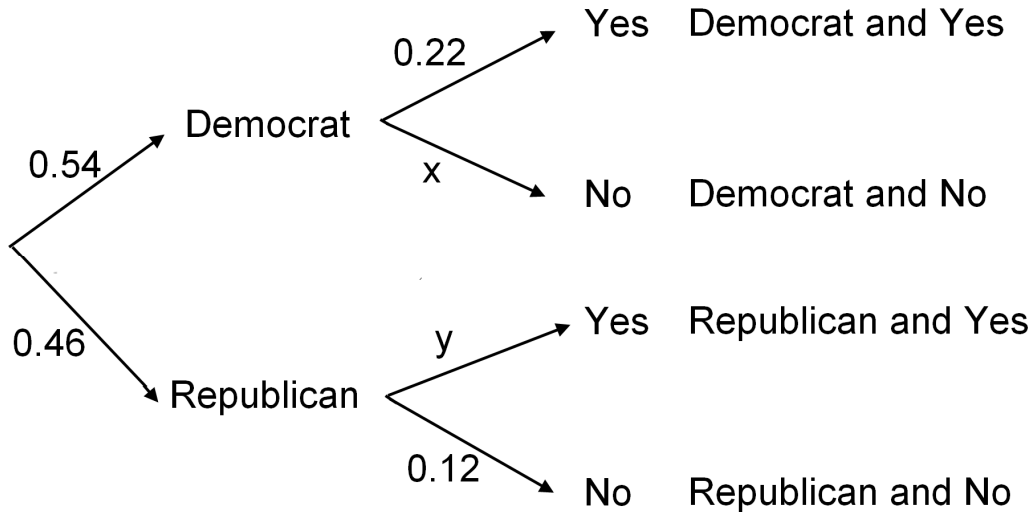
Justify: (3pts)

- 8) 57% of the senior class is female. Of the females, 14% are school athletes. What percent of seniors are female athletes?
- a. 8%
b. 41%
c. 69%
d. not possible; gender and athletic status are mutually exclusive events

Statistics
Probability Unit Test Review

- 9) Here is a partially finished tree diagram showing the political parties of local government officials and how they are expected to vote on an upcoming issue.

Complete the tree diagram with all of the labels and probabilities.



Which probability is represented by **x** on the diagram?

- The probability of all “no” votes
- The probability that a Democrat votes “no”
- The probability that the person is a Democrat
- The probability that that the person did not vote.

10) Using the diagram in question 4, find these probabilities:

- x _____
- y _____
- $P(\text{No})$ _____
- $P(\text{No and Republican})$ _____
- $P(\text{No or Republican})$ _____

Statistics
Probability Unit Test Review

- 11) Kiara is using the two spinners shown below to play her new board game. She spins the arrow on each spinner once. Brianna uses the first spinner to determine how many spaces to move. She spins the arrow on each spinner once. Brianna uses the first spinner to determine how many spaces to move. She uses the second spinner to determine whether her move from the first spinner will be forward or backward.



- Draw a fully labeled tree diagram to show the possible outcomes from spinning each spinner once.
- What is the probability that Kiara spins 3 spaces backward?
- What is the probability that Kiara moves forward?
- Kiara needs to move at least 2 spaces forward to get ahead of her opponent. What is the probability that this will happen on her next spin?

Statistics
Probability Unit Test Review

- 12) An experiment tested a tree fertilizer on a large number of elm and oak trees to see whether it promoted positive changes such as growth, healthier leaves, or increased foliage (leaves). Below is a summary of the data collected in the experiment.

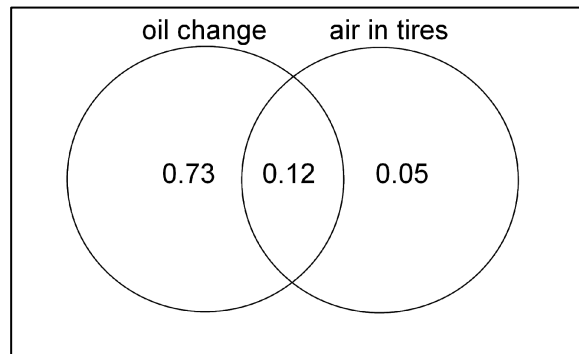
Type		Positive	Negative	Total
	Oak	73	45	118
	Elm	102	27	129
	Total	175	72	247

- What is the probability that a tree has a positive change?
- What is the probability that an oak tree has a positive change?
- What would it mean for the effect of this fertilizer to be **independent** of tree type?
- Do the data suggest effect (positive/negative) and tree type are **independent**? Explain.

Statistics
Probability Unit Test Review

- 13) The Venn diagram at right shows the percentages of cars at Sam's Garage that need an oil change or air in the tires.

Show your work.



- What is the probability that a car needs air in its tires?
- What is the probability that a car needs an oil change **or** air?
- What is the probability that a car needs an oil change **and** air?
- What is the probability that a car needs **neither** an oil change nor air?
- Are needing an oil change and needing air **mutually exclusive** events?

Explain why or why not.

Statistics
Probability Unit Test Review

14) The table shows the plans of a group of high school seniors. **Show your work.**

		Post Graduation Plans			
		work	college	military	other
Sex	Male	0.09	0.29	0.11	0.04
	Female	0.05	0.35	0.05	0.02

- What is the probability that a senior plans to join the military?
- What is the probability that a senior plans to join the military **given that the** student is female?
- What is the probability that a senior is female **given that** the senior plans to join the military?
- Explain what it would mean if the sex and post-graduate plans of seniors are **independent**.
- Based on the table, does it appear that a senior's post-graduation plans are **independent** of the person's sex?
Justify your answer.